TCT-704
Echocardiographic Parameters Predictive of Right Ventricular Function after MitraClip® Implantation
Marco Marzullo1, Hannes Alessandrini1, Christian Frekker1, Thielschen Thomas1, Peter Wohlmuth1, Karl-Heinz Kuck1, Ulrich Schäfer1, Felix Kreidel1
1Department of Cardiology, Asklepios Klinik St. Georg, Hamburg, Germany, 2Aklepios ProResearch, Hamburg, Germany

Background: Impaired right ventricular systolic (RVS) function is of great prognostic relevance in patients (pts) with mitral valve disease. MitraClip® implantation (MCI) has shown to significantly reduce mitral regurgitation (MR) of primary and secondary etiology. The aim of this subgroup analysis was to assess which left ventricular basic echocardiographic parameters before the procedure predict the normalization of initially reduced RVS function.

Methods: Out of a total population of n=323 pts with severe MR who underwent MCI, we retrospectively included 121 consecutive pts for whom the transthoracic echocardiography data were available (cases 155-276). Inclusion criterion for further analysis was an impaired RVS function (TAPSE < 18 mm) before MCI. MR grade and TAPSE were evaluated at 6 weeks and at 6 months after implantation. Improvement of the RVS function was defined by TAPSE > 18 mm. MR etiology as well as systolic (LVEF) and diastolic (E/E’ Ratio) function of the left ventricle were tested as predictors of improvement of RVS function (Wilcoxon-Tau).

Results: Over a mean follow-up of 26 months, recurrent MR grade ≥ 3+ developed in 14 (17.5%) patients. Baseline distribution of age, sex, left ventricular systolic function and dimensions were similar between patients with and without MR recurrence. The tethering area was the only measurement significantly associated with MR recurrence (2.2±0.9 vs 1.7±0.7 cm² in patients without recurrence, p=0.042). On multivariate binary logistic stepwise regression, tethering area was an independent predictor of MR recurrence (odds ratio 2.1, 95% confidence interval: 1.0 to 4.3; p=0.043).

Conclusions: Echocardiographic assessment of the tethering area could be used to identify patients at risk of MR recurrence following percutaneous mitral valve repair for functional MR. These results may guide selection of patients for the MitraClip procedure and thereby improve long-term efficacy.

TCT-705
Tethering Area is an Important Predictor of Recurrent Mitral Regurgitation Following the MitraClip Procedure
Wen Loong Yeow1, Takashi Matsumoto2, Asma Hussaini1, Robert Siegel1, Pooja Khanolkar1, Alfredo Trento1, Swaminatha V. Garudevan1, Moody Makar1, Sushil Kar2
1Cedars-Sinai Medical Center, Los Angeles, CA

Background: Echocardiographic assessments of mitral valve tethering were identified as predictors of recurrent functional mitral regurgitation (MR) following surgical annuloplasty. This report details the implications of these predictors of recurrent functional MR following percutaneous mitral valve repair with the MitraClip device.

Methods: Eighty-four out of 92 (91%) consecutive patients with functional MR achieved successful MR reduction (MR ≤ 2+ on discharge) following the MitraClip procedure; 80 patients with follow up MR assessments were reviewed. Pre-procedural transoesophageal echocardiographic measurements of the mitral annulus diameter, tethering angles, height and area on the mid-esophageal long axis view were collated (Figure 1).

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Group 1</th>
<th>Group 2</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAPSE pre MitraClip® [mm]</td>
<td>&lt; 18</td>
<td>&lt; 18</td>
<td>-</td>
</tr>
<tr>
<td>TAPSE post MitraClip® [mm]</td>
<td>19 [18, 20]</td>
<td>13 [12, 16]</td>
<td>-</td>
</tr>
<tr>
<td>Number of pts</td>
<td>12 (31 %)</td>
<td>27 (69 %)</td>
<td>-</td>
</tr>
<tr>
<td>Δ MR by Grade</td>
<td>1 [0.5, 1]</td>
<td>1 [0.5, 2]</td>
<td>0.64</td>
</tr>
<tr>
<td>LVEF [%]</td>
<td>59 [49, 60]</td>
<td>27 [22, 33]</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>E/E’ Ratio &gt; 12</td>
<td>0 (0 %)</td>
<td>26 (96 %)</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>MR primary etiology</td>
<td>12 (100 %)</td>
<td>2 (8 %)</td>
<td>&lt;0.05</td>
</tr>
</tbody>
</table>

Conclusions: Tethering area could be used to identify patients at risk of MR recurrence following percutaneous mitral valve repair for functional MR. These results may guide selection of patients for the MitraClip procedure and thereby improve long-term efficacy.

TCT-706
The Influence of Mild Iatrogenic Mitral Valve Stenosis after Mitraclip® Implantation on Right Ventricular Function. Preliminary Data.
Marco Marzullo1, Hannes Alessandrini1, Christian Frekker1, Thielschen Thomas1, Peter Wohlmuth1, Karl-Heinz Kuck1, Ulrich Schäfer1, Felix Kreidel1
1Department of Cardiology, Asklepios Klinik St. Georg, Hamburg, Germany, 2Aklepios ProResearch, Hamburg, Germany

Background: Impaired right ventricular systolic dysfunction (RVSFD) is a common complication of percutaneous mitral valve repair (MCR) due to iatrogenic mitral valve stenosis (IMVS). This preliminary study aims to verify the impact of IMVS on RVF.

Methods: Out of a total population of 323 pts with severe mitral regurgitation (MR) who underwent MCI, we retrospectively enrolled those pts for whom right heart transthoracic echocardiography and sufficient follow-up data were available. The RVF function was assessed by TAPSE, which was defined as pathological when < 18 mm. The IMVS was assessed a few days after MCI with cw-doppler based gradient measurement (P mean discharge).

Results: In 55 pts (22 female; age: 74 +/- 11 years) it was possible to measure: TAPSE and MR, before and 6 weeks (6W) after MCI and P mean discharge. Comparing the initial TAPSE to that measured after 6W, we have found 4 Groups of pts with different patterns of TAPSE development: Group 1, that normalizes its Δ P mean discharge; Group 2, that decreases its initially normal TAPSE; Group 3 with permanently normal TAPSE and Group 4 with permanently pathological TAPSE values. Between the 4 groups there was no significant difference in MR reduction and in P mean discharge (Table 1). Although not statistically significant Group 2 was found to have a higher P mean discharge than all other groups.

Conclusions: This preliminary study shows that P mean discharge does not predict right ventricular systolic function after MCI. Although there seems to be a tendency that pts, with an iatrogenic mitral stenosis, of more than mild severity, worsen their initially normal TAPSE after the procedure.